CLAIMS:

1. A multi-axis hinge arrangement comprising

a first hinge part;

a second hinge part;

at least two connecting arms spaced a distance apart, each said connecting arm being substantially torsionally stiff; and

bending regions connecting each of said two connecting arms to each of said first hinge part and said second hinge part;

at least one of said first hinge part and said second hinge part including,

a resilient area operating as an energy storage region and located remotely from said bending regions for storing energy imparted by said connecting arms when said hinge is actuated, and

transmitting regions intermediate at least one said bending region and said resilient area and immediately contacting said bending region, said transmitting regions transmitting force supplied by said bending region by actuation of said hinge to said resilient area.

2. The multi-axis hinge arrangement of claim 1 wherein said hinge arrangement has an open hinge stable position and a closed hinge stable position, said connecting arms supplying distortion forces to said bending regions at intermediate positions between said open hinge stable position and said closed hinge stable position.

3. The multi-axis hinge arrangement of claim 1 wherein said resilient area stores energy through resilient deformation thereof.

4. The multi-axis hinge arrangement of claim 1 wherein said resilient area is provided on at least one of said first and second hinge parts between two bending areas of two said connecting arms.

5. The multi-axis hinge arrangement of claim 4, wherein the transmitting area adjacent to the bending areas is, compared to the resilient area, substantially stiff with regard to bending and torsion.

6. The multi-axis hinge arrangement of claim 1 wherein each of said connecting arms is defined by said bending regions and by a shorter edge and a longer edge.

7. The multi-axis hinge arrangement of claim 1 wherein said resilient area is positioned on at least one of said first and second hinge parts with a said transmitting region interposed between said resilient area and any of said bending regions.

8. The multi-axis hinge arrangement of claim 6, wherein said longer edge of at least one connecting arm has a contoured form that is substantially identical in the open and closed position of said hinge arrangement, and longer edge compared to these two positions has a reduced curvature or bending in an intermediate position of said hinge arrangement, the connecting arm being torsionally stiff at its shorter edge.

9. The multi-axis hinge arrangement of claim 1, where said connecting arms in the closed position transmit resilient force to enhance the snap action of the hinge upon opening.

10. The multi-axis hinge arrangement of claim 1, wherein the connecting arms have a substantially constant thickness and have an outer surface that is substantially conformal with the outer surface of the hinge arrangement.

11. The multi-axis hinge arrangement of claim 1, wherein the connecting arms at their shorter edge have a greater thickness compared to their thickness at their longer edge and have an outer surface that is substantially conformal with the outer surface of the hinge arrangement.

12. The multi-axis hinge arrangement of claim 1, wherein the bending regions connecting the two connecting arms to said first and second hinge parts lie along hinge lines, the hinge lines associated with the bending regions of a said connecting arm intersecting at an apex, the distance D between the apexes defined by the hinge lines of said two connecting arms being at least substantially half the length of the shorter edges thereof

13. The multi-axis hinge arrangement of claim 1, wherein at least a part of a second hinge part cooperates with a part of said first hinge part during movement between open and closed positions.

14. The multi-axis hinge arrangement of claim 9, wherein the cooperating part of said second hinge part is a protruding hinge area which engages hinge area of the first hinge part a point where the cinematic curve of the lower edge of said hinge part performs an initial movement outside the hinge surface.

15. The multi-axis hinge arrangement of claim 1, wherein the bending areas are embodied as film hinges having a cross-section that is delimited by a circular curve on their inner side and a straight line on their outer side.

16. The multi-axis hinge arrangement of claim 15, wherein a supporting edge is provided at the inner side of the film hinge to constrain torsional movement of the film hinge, when in the closed position, thereby increasing the transfer of energy to said resilient area.

17. The multi-axis hinge arrangement of claim 16, wherein the supporting edge is formed by an asymmetrical arrangement of the curve delimiting the cross-section of said film hinge, thereby forming an edge that is oblique with regard to the parting plane and facing upward toward the inside of the hinge arrangement.

18. The multi-axis hinge arrangement of claim 1, wherein at least one bending region is curved.

19. A resilient hinge arrangement comprising:

a first hinge part;

a second hinge part assuming at least two stable pivoting positions with respect to said first hinge part;

said second hinge part being arranged to pivotably move between said at least two stable pivoting positions in an elastically resilient manner;

two connecting arms spaced a distance apart and being substantially flexurally rigid, and

bending regions connecting said substantially flexurally rigid connecting arms to said first and second hinge parts;

at least one of said first and second hinge parts including,

first and second coupling areas connected movably to said connecting arms through said bending regions, and

one or more resilient areas connected to the first and second flexible coupling elements but spaced away from said bending regions to absorb resilient energy or flex therefrom and increase the force driving the first and second hinge parts to one of said at least two stable positions.

20. The hinge arrangement of claim 19 wherein said first hinge part is a body of a closure and the second hinge part is a lid covering an opening provided in said body.

21. The hinge arrangement of claim 20 wherein said first hinge part is fixed onto a container.

22. The hinge arrangement of claim 19 wherein each connecting arm has a short free side and a long free side;

the bending regions of said hinge arrangement being aligned along bending lines, the bending lines of each said connecting arm intersecting at an apex, the apexes of two said connecting arms being separated by a distance D greater than twice the length of the shortest free side of each said connecting arm.

23. The hinge arrangement of claim 19, wherein each of said connecting arms is substantially stress-free in an opened position and a closed position of said hinge arrangement.

24. A multi-axis hinge arrangement comprising

a first hinge part;

a second hinge part;

at least two connecting arms spaced a distance apart, each said connecting arm being substantially torsionally stiff; and

bending regions connecting each of said two connecting arms to each of said first hinge part and said second hinge part;

the geometrical relationship between said first and second hinge parts and said at least two connecting arms having at least two stable hinge position that are substantially strain free, said hinge arrangement when in a position other that said stable positions developing forces at said bending regions which are resiliently absorbed by resilient areas in said connecting arms.

25. The multi-axis hinge arrangement of claim 24 wherein each of said connecting arms is defined by said bending regions and by a shorter edge and a longer edge.

26. The multi-axis hinge arrangement of claim 24 wherein said at least two stable positions correspond to the open state and the closed state of said multi-axis hinge arrangement.

27. The multi-axis hinge arrangement of claim 26 wherein one said stable position is outside the design range of motion of said hinge past the closed position thereof and hinge can not practically be moved there, the closed position of said hinge arrangement being thereby biased with a closing force.

28. The multi-axis hinge arrangement of claim 26 wherein one said stable position is before the closed position in the design range of motion of said hinge past the closed position thereof and therefor strain is imparted upon movement past this position, the closed position of said hinge arrangement being thereby biased with a snap return on opening.

29. A method of imparting a snap action to a multi-axis hinge arrangement including a first hinge part and a second hinge part separated by at least two connecting arms spaced a distance apart, each said connecting arm being substantially torsionally stiff; and being connected to said first hinge part and said second hinge part by bending regions, comprising the steps of ;

providing a resilient energy storage regions remotely located from said connecting arms as part of at least one of said first and second hinge parts for storing energy imparted by said bending regions when said hinge is actuated;

transmitting force from said bending regions to said resilient energy storage regions over transmitting regions located immediately adjacent to said bending regions.